

## Kura Tauī'anga Reva

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Climate Change Cook Islands

Office of the Prime Minister

### ***Nassau School completes its SRIC project!***



*Nassau workers proudly displays the SRIC sign on completion of the school Uwi Kuru project 24 April  
(Photo by Felix Poila)*

Last year five senior students from Nassau Island participated in the Climate Change Northern Students workshop under (SRIC) Strengthening the Resilience of our Islands and Communities to Climate Change funded by the ADAPTATION FUND. Students guided by their teacher Felix Poila worked in the workshop and put together a proposal they envisaged would benefit their tiny isolated island in the North.



*Nassau students with teacher Poila Poila at the workshop in 2015  
(Photo by Celine Dyer)*

The students wanted to fence off the taro planting area mainly Te Uwi Kuru to keep out wandering pigs and chicken that usually dig up and damage crops. The estimated circumference of the area is 400 metres.



*Students working on their proposal at the workshop July 2015  
(Photo by Celine Dyer)*

The SRIC Focal Point on Nassau Pamanini Tuatai worked with the school to design the project while the SRIC team in Raro handled the logistics arrangements. In February this year the materials for the project was delivered to Nassau and brought the whole community to work on the project.



*Nassau students working on project site with the community  
(Photo provided by Felix Poila)*

Last week the school reported on the completion of the fencing project and according to school principle Mr Felix Poila, "the second phase of the project is to get some vegetable seedlings so the school can also have a vegetable garden and learn about other agriculture crops rather than taro alone". SRIC manager William Tuivaga is ecstatic that the schools project in the North born from the Northern Schools climate change workshop held last year are seeing

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tangible results with the Penryhn Te Pitaka and the Pukapuka Uwi projects also near completion.

*Congratulations Nassau School and the community for the accomplishment!*

### **Manihiki Hydroponics update**



**Manihiki hydroponics Tauhunu village, under construction April**  
(Photo provided by John McLeod)

Manihiki will soon be running two hydroponics one for each village of Tauhunu and Tukao. At the moment, construction is underway for the Tauhunu hydroponics under the leadership of the Agriculture officer Mr Moto Finiasi. According to the SRIC Focal Point for Manihiki Mr John McLeod, this new structure is bigger than the previous one based on the demand for fresh leaf vegetables in the village of Tauhunu.



**Foundation of the hydroponics** (Photo provided by John McLeod)

Once the hydroponics in Tauhunu is completed the team will begin the work on the Tukao village hydroponics.

### **Climate Change and Biodiversity Conservation Workshop for the Southern Schools**



**Southern school students on Rarotonga for the climate change and biodiversity workshop. Seen here with local coastal engineer Don Dorrell on a field trip to Nikao** (photo by Teina Rongo)



**Arrival of Mauke students to Rarotonga via Air Raro for the week long workshop.**

Following the success of the northern islands school workshop last July 2015, Climate Change Cook Islands in partnership with National Environment Services through the Ridge to Reef project help a another week-long workshop on Rarotonga for the southern island schools. The objective of this workshop was to give students the opportunity to - build their awareness of climate change, protected areas management, biodiversity and other environmental issues. In addition, students were expected to work with the local council, elders including various groups on their respective islands, and experts from various fields to guide them through the development of a concept note that can be developed into a full project proposal at a later stage. The workshop focused on Years 9 - 11 from the Pa enua of Mangaia, Mitiaro, Atiu, Mauke, and Aitutaki. The workshop was held at the *Rarotongan Beach Resort & Spa, Arorangi* from the 22<sup>th</sup> to the 29<sup>th</sup> of April.

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Prior to the workshop the SRIC CC team consulted with each schools, the island government, and members of the community to come up with a project for the schools to present at the workshop.



*Students of Mitiaro with Teina Rongo during a trip before the workshop to help the Mitiaro students prepare their project presentation for the workshop (photo by Teina Rongo)*

During the workshop, schools presented their project ideas, and throughout the week, the presentation was fine tuned and was presented again on the last day of the workshop as their project concept note. Presentation by the schools gave their counterparts an opportunity to learn about their neighbouring islands.

Various presentations by local experts and field trips were provided to the students throughout the week. Field trips included composting and organic farming with Teava Iro, coral reef surveying with Dr. Teina Rongo, GIS mapping exercise with Dan Rasmussen (NES) and Marino Wichman from Seabed Mineral Authority, Worm farm with TIS, water quality testing with MMR, and coastal protection with Don Dorrel.

It was exciting to observe students learning and interacting during the workshop.



*Students from Mitiaro and Atiu enjoying each other's company at the Cook Islands Meteorological Office (photo by Teina Rongo)*



*Ngere Goerge from MMR giving a presentation on monitoring and management of raii in the Cook Islands (photo by Teina Rongo)*

### Field trip to Muri lagoon

Muri lagoon has been a topic of much debate in recent months due to a cyanobacteria bloom, which was unsightly and smelly to tourists and residents in the area. Dr. Rongo explained to students the history of the area and how these blooms were both a result of nutrient overloading and climate variability. Because the SRIC CC team has been visiting all the schools in the Pa Enua before the workshop to talk about these issues, the field trip was merely an opportunity for students to witness these issues first hand. In particular, nutrient overloading and reduced rainfall due to the strong El Niño events recorded this past year were issues students were familiar with from the SRIC CC team presentations in the Pa Enua.

Students also learned that poor land use practices (e.g., wetland filling and increased coastal development) would alter the flow of water and associated nutrients from the ridge to the lagoon, and therefore would also have adverse impacts to the various habitats along the way.

Water quality testing with Tutu Turua and Hilary Robyn from MMR was complimentary, because it gave students the opportunity to use the YSI meter to measure parameters such as dissolved oxygen, temperature, conductivity, and pH – just to name a few. Students learned how these parameters are used to indicate the health of the lagoon, which is critical to guide our actions on land. Following the field trip, students visited the MMR laboratory to learn about the equipment used to test for marine nutrients and bacteria.

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*Top: Students learning about water testing from MMR lab technicians Tutu and Hilary (photo by Celine Dyer). Below: Students learning to use the YSI meter to test the lagoon condition of Muri.*

### Field trip to Rutaki reef flat – coral reef survey

Coral reef monitoring has been ongoing on Rarotonga and to a lesser extent Aitutaki since the early 1990s. Information from these monitoring have been critical for understanding factors affecting our reefs and how reef conditions and water quality contribute to problems such as ciguatera poisoning and crown-of-thorn starfish outbreak respectively, especially on Rarotonga and Aitutaki. Dr. Rongo gave a presentation on basic coral biology and taxonomy, reef formations, results from previous reef monitoring surveys, and the coral reef survey methodology for the field trip. The point quadrat method (using a 1 m<sup>2</sup> quadrat) was explained to the students and they were given the opportunity to carry out a brief assessment of the Rutaki reef flat area using this method.



*Mangaia students recording the benthos within their quadrat on the Rutaki reef flat on the southwest side of Rarotonga.*

Data collected from the field trip was analysed to obtain the percent cover for three basic categories (i.e., coral, algae, and sand) determined *a priori*. Students discovered that the results of their survey (70% algae, 6% coral, and 24% sand) were typical of reefs on Rarotonga, giving them some confidence in their work. Discussion of their results was important, because it helped students understand the data they collected and how their results can be used to understand the condition of the surrounding area.

### Field trip to the weather station

Arona Ngari was a “one-man gang”, who showcased the various equipment used to monitor meteorological parameters needed to understand the daily weather patterns for Rarotonga and the rest of the Cook Islands. Students seem to be fascinated with the helium balloon deployed daily. Following the tour of the station, two students were selected to present the weather forecast on television that evening.



*Director of Cook Islands Meteorological Station Arona Ngari, explaining the various instruments used to measure weather parameters.*

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### **Field trip to Nikao - coastal protection unit**

With increased storm frequency in the last 20 – 30 years in the region, compounded by sea level rise (due to human-induced climate change), it is clear that coastal problems in the Cook Islands have increased. Yet, this is one area that has received very little attention in the Cook Islands. Don Dorrell, a local engineer, well known in the region for his pioneering work on coastal protection, is the designer of the coastal protection units (i.e., COPED) seen at select locations around the island. Students and teachers were fortunate to have Mr. Dorrell join them on a field trip to the western side of the Rarotonga runway to explain basic coastal processes and also wave genesis. At the site, Mr. Dorrell noted that past cyclones have severely eroded the western side of the runway; the placement of his COPED system at this site was to minimize wave damage during cyclones. Students learned that the COPED system is designed not only to dissipate the energy of large waves, but also to help the accumulation of sand on the beaches in the vicinity of the COPED system.



***Don Dorrell explaining the purpose of his COPED system (in the background) to students at the western end of the Rarotonga airport.***



***Alanna Smith and Liam Kokaua of TIS talking to students about worm farming***

## Kura Kuriri

Climate Change SRIC EXPO 23 – 27  
May at the National Auditorium  
displays of SRIC projects in the Pa  
Enua running parallel to “Brilliant  
Resilience” Workshop.

Till Next Time – Kia Manuia!

### ***TIS Worm Farm***

Students learned how worms can be farmed to reduce importation of toxic pesticides and dependency on fertiliser. Apparently, waste produced by worms is very concentrated and adds more nutrients to soil whilst at the same time can keep insects away from damaging crops. Interestingly, at evaluating the overall success of the workshop, about eighty five (85%) of students liked the worm farm trip because of its usefulness in the gardens and it's something they could easily do on their respective islands.